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Reprinted from TRANSACTIONS OF THE AMERICAN FISHERIES SOCIETY
Vol. 92, No. 3, July, 1963
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TROPICAL INLAND FISHERIES. *By C. F. Hickling. (Tropical Agriculture Series.) John Wiley & Sons, Inc., New York. 1961. 287 pp., 4 figs., 68 plates (part col.), 13 tables. $7.25.*

The British Colonial Office had in the recent past the most extensive obligations for tropical inland fishery research and administration of any organization in the world. Dr. Hickling, as Fisheries Advisor to this office and as Acting Director of the Fish Culture Research Station at Malacca in the Federation of Malaya, was in a unique position to make personal observations and have access to information on the widest variety of tropical inland fisheries. He is, therefore, eminently qualified to author an introduction to, and a survey of, his subject.

The book is organized around four general topics, any one of which could be the theme of a volume. He passes from an introduction to tropical limnology to a discussion of the biology of tropical fisheries, thence to a brief survey of fishing methods, preservation, and marketing, and finally to an extensive discussion of various natural as well as artificial inland tropical fisheries.

This book should be required reading for any temperate-zone, freshwater fishery biologist venturing into the tropics as an expert or advisor in one of the various aid programs. There has been a considerable amount of lost and ineffectual effort on the part of some of these people due primarily to their lack of even a rudimentary knowledge of tropical fishery biology or so-called primitive fishing methods.

A method in which a man stands in a muddy stream and randomly tosses a spear into the water in hopes of hitting a fish may be said to be primitive. In this instance, the introduction of more sophisticated methods would appear to be profitable. On the other hand, this same individual may take part in a highly organized fishery consisting of a complex series of weirs and associated traps of enormous proportions and high efficiency. This fishery would be considered primitive only in the sense of location (sometimes a bit of snobbery here) and materials used. So-called primitive fishing methods can be highly productive and, what is more, well suited to the fishery and the people involved. They may be so productive that ill-advised, restrictive regulations predicated upon temperate-zone sport fish experience may be arbitrarily applied. The assumption, usually with little or no experimental evidence, is made that if large numbers of fish of all sizes are being taken, then the method is likely to be harmful. The extraordinary recuperative power of most tropical fisheries is not understood or considered. Dr. Hickling tells of a report made in 1878 on the future of a particular fishery in which the prediction of overfishing was made if a particular weir system continued in use. Apparently nothing was done; the method is still in use, and the fishery remains as productive as ever.

Dr. Hickling does not imply that modern or temperate-zone methods are not applicable in the tropics. He is suggesting that regulatory or management assumptions made on the basis of nontropical experience need some investigation and evaluation in the light of tropical needs and biology before they are applied.

A good example of the wise use of new techniques was the introduction of nylon gill nets into the freshwater fisheries of Uganda by the Colonial Office Fishery Officers of the Uganda Game and Fisheries Department. The high efficiency of these nets led to economic conditions favorable for the development of an outboard-motor-powered fishing fleet. A subsequent refinement was the building of access roads and marketing centers to facilitate movement of the product into areas of demand. All this was done in such a manner that no undue dislocation of people or of fisheries occurred. In all fairness, however, it must be said that not everyone conversant with the fisheries of Uganda believed the innovations to have been beneficial. It has, however, yet to be proved otherwise.

The first thought regarding the section, *Lake and Dam Stocking; Fish Transplantation*, is that it is too short. There is much more that can be said regarding this important aspect of fisheries development. A single paragraph is allotted to Southern Rhodesia where more than 8,000 artificial ponds exist, most of which have been stocked with fish. There is also no mention of the important pond culture work done in Southern Rhodesia by Dr. A. Marr at the Fisheries Research Center near Mazoe. Kenya and Uganda share a somewhat longer paragraph. Both of these countries have pond culture schemes. Uganda has an excellent pond culture research center at Kajansi from which considerable information has been obtained. One Uganda province in 1958 had over 1,000 farm ponds stocked with *Tilapia*. An interesting point to be gained from this chapter is that the successful pond schemes utilize fish that are either native to the country or of tropical origin.

Dr. Hickling, in what may be unconscious agreement with other fishery experts, believes much of the future development of tropical inland fisheries lies in the direction of fish (pond) culture and the judicious stocking of new species. There is much to be said in favor of pursuing the former course and much more to be said in favor of going slow on the latter. We are only in the first stages of knowledge concerning the ecology of natural tropical fisheries. Fishery workers in the newly emerging states of the tropics are faced with ever-increasing demands for fishery products with the result that fishery development is often ahead of its supporting research. This book is not a substitute for research, but its use by harried fishery men in these countries should materially increase the number of better decisions, as they will be based on tropical rather than temperate-zone experience.

The author remarks that, "What is wanted is faith, by those who hold the public's purse, in the value of fisheries research. . . ." One does not need to be working in inland tropical fisheries to agree with this view.

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